

ABSTRACT OF THE DISCLOSURE

A method of fabricating a microelectronic die is provided. Transistors are formed in and on a semiconductor substrate. A channel of each transistor is stressed after the transistors are manufactured by first forming a diamond intermediate substrate at an elevated temperature on a handle substrate, allowing the intermediate substrate and the handle substrate to cool, and then removing the handle substrate. The intermediate substrate has a lower coefficient of thermal expansion than the handle substrate, so that the intermediate substrate tends to bow when the handle substrate is removed. Such bowing creates a tensile stress, which translates into a biaxial strain in channels of the transistors. Excessive bowing is counteracted with a compensating polysilicon layer formed at an elevated temperature and having a higher CTE on a side of the diamond intermediate substrate.